USDA, National Agricultural Statistics Service

# Indiana Crop & Weather Report

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## CROP REPORT FOR WEEK ENDING APRIL 17

### AGRICULTURAL SUMMARY

Heavy rain showers during the week left standing water in many fields especially in southern counties, according to the Indiana Field Office of USDA's National Agricultural Statistics Service. Planting of corn and other field activities were held to a minimum due to the cool, wet soil conditions. A limited amount of light tillage work, fertilizer applications and pre-plant chemical applications were accomplished mainly in central and northern areas. Some winter wheat acreage has been sprayed for wild garlic. Fruit crops are blooming in southern counties.

### FIELD CROPS REPORT

There were 2.1 **days suitable for field work**. Two percent of the intended **corn** acreage has been **planted** compared with 15 percent last year and 4 percent for the 5-year average.

Twenty-three percent of the **winter wheat** acreage is **jointed** compared with 30 percent last year and 28 percent for the 5-year average. **Winter wheat condition** is rated 58 percent good to excellent compared with 68 percent last year at this time.

Major activities during the week included: vaccinating cattle, clearing fence rows and ditches, preparing planting and tillage equipment, hauling grain to market, spreading fertilizer and manure, applying anhydrous ammonia, repairing and installing drainage tile and taking care of livestock.

### LIVESTOCK, PASTURE AND RANGE REPORT

Livestock are reported to be in mostly average to good condition at this time. **Pasture condition** is rated 43 percent good to excellent compared with 71 percent last year at this time. Pastures are improving but re-growth has been slow this spring. Warm, sunny days are needed to help spur development. Hay supplies are rated 4 percent very short, 24 percent short, 68 percent adequate and 4 percent surplus.

### CROP PROGRESS

| Crop | This Week | Last Week | Last Year | 5-Year Avg. |
|---|---|---|---|---|
| | Percent | | | |
| Corn Planted | 2 | 1 | 15 | 4 |
| Winter Wheat Jointed | 23 | 10 | 30 | 28 |

### CROP CONDITION

| Crop | Very Poor | Poor | Fair | Good | Excel-lent |
|---|---|---|---|---|---|
| | Percent | | | | |
| Winter Wheat | 1 | 7 | 34 | 47 | 11 |
| Pasture | 4 | 13 | 40 | 37 | 6 |

### SOIL MOISTURE & DAYS SUITABLE FOR FIELDWORK

| Soil Moisture | This Week | Last Week | Last Year |
|---|---|---|---|
| | Percent | | |
| **Topsoil** | | | |
| Very Short | 1 | 1 | 1 |
| Short | 4 | 7 | 9 |
| Adequate | 58 | 67 | 82 |
| Surplus | 37 | 25 | 8 |
| **Subsoil** | | | |
| Very Short | 1 | 1 | 0 |
| Short | 10 | 13 | 6 |
| Adequate | 69 | 72 | 85 |
| Surplus | 20 | 14 | 9 |
| **Days Suitable** | 2.1 | 3.0 | 6.0 |

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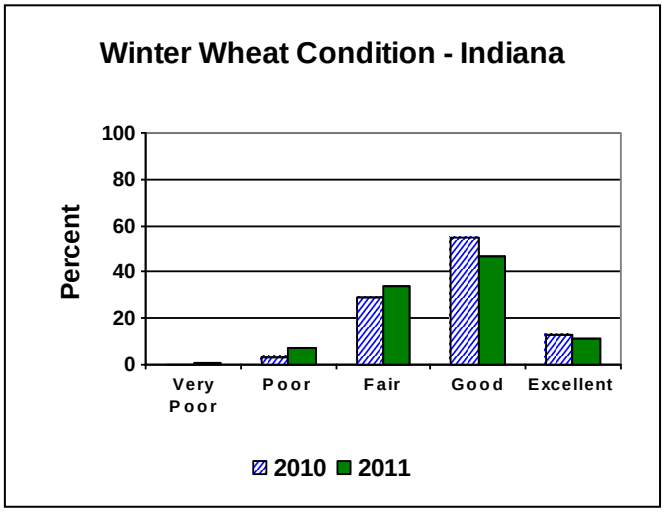


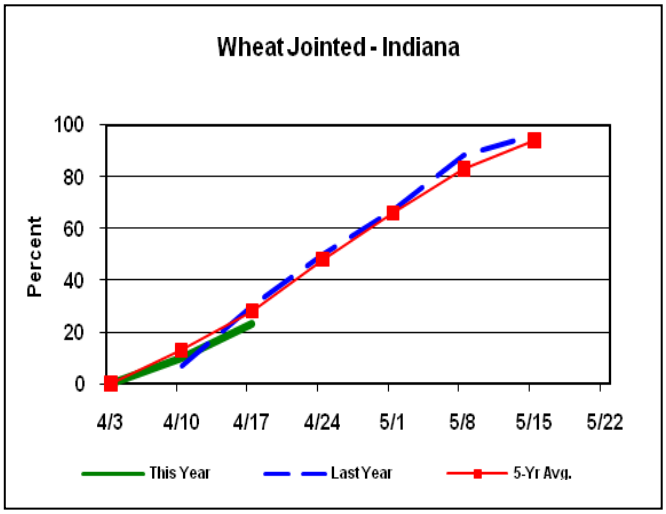


## Other Agricultural Comments And News

### Nitrogen Inhibitors, What is What and Should You Consider Their Use?

Written by Robert Mullen and Ed Lentz and appears in the C.O.R.N. Newsletter 2011-08.

Now that we finally have a hint of spring, producers start thinking about planting corn and planning on nitrogen fertilization applications. In case you have not noticed, fertilizer prices are a little higher than they were this time last year. This typically leads to questions like – "should I consider the use of an inhibitor?" The goal of this article is to cover (very briefly) the inhibitors that are out there, what they do, and where their use should be considered.

Multiple universities conduct field research with inhibitors to determine effectiveness, but lab studies conducted to determine proof of mode of action are more critical to our understanding of their usefulness. Several inhibitors have sound lab evidence that they do what they are promoted to do (and some do not), but we may struggle to find usefulness from field studies. Thus we, as university researchers, attempt to identify nitrogen sources, application methods, and application timings that are more likely to benefit from the use of these inhibitors.

**Urease Inhibitors**

First we will discuss urease inhibitors. Urea based nitrogen fertilizers are an organic commercial form that requires a biological enzyme to promote degradation to ammonia. Ammonia exists as a gas at normal temperature and pressure, thus it may be lost by volatilization if not exposed to water. Ammonia loss potential by volatilization for incorporated urea products is negligible because soil holds enough water to capture ammonia as ammonium that can be held on the soil's cation exchange complex. Surface applications of urea are at risk of loss because there is no opportunity to capture the ammonia as it is produced.

Urease inhibitors can have different modes of action, and the first question we should ask is do they work? The active ingredient in the inhibitor can act as a substrate for the urease enzyme, thereby protecting free urea by allowing it to stay in solution longer, or the inhibitor can inactivate the enzyme. Agrotain® is the most common commercially available urease inhibitor. The active ingredient in Agrotain® is N-(n-butyl) thiophosphoric triamide. The mode of action is not clearly defined, but it is thought to act as a substrate for the urease enzyme. Regardless of the mode of action, laboratory evidence has shown that it does allow urea to be retained in the soil longer.

Other urease inhibitors are marketed, some may have some activity, but it is your job as a producer/consultant to determine whether or not the proposed mode of action makes sense. We would also encourage you to inquire about lab data indicating that the material being marketed does what it is supposed to do.

Even if a urease inhibitor has been demonstrated in a laboratory to have some inhibition properties on the enzyme urease, the agronomic question still remains as to its usefulness in a field setting. It really depends upon how nitrogen is to be applied (and the form) and the rate of nitrogen being applied. Higher rates of urea nitrogen (under most conditions) likely do not require urease inhibitors. Surface application of dry urea in high residue situations is a good place for the use of urease inhibitors. Dribble applications of liquid UAN may benefit from a urease inhibitor in high residue situations, but clean till fields are less likely to benefit. Injected liquid UAN (whether it is knifed or coultered) does not require stabilizers based upon current research.

**Nitrification Inhibitors**

Nitrification inhibitors are the other inhibitors marketed, but they have a completely different mode of action. Any nitrogen supplied as a commercial fertilizer is ultimately transformed to a nitrate form of nitrogen (or at least a significant fraction of that supplied). In the presence of adequate oxygen, warm temperatures (> 50 F), and some moisture, ammonium-N is converted to nitrate-N through a biochemical process (known as nitrification) that requires two forms of soil bacteria. The first bacterium

(continued on page 4)

# Weather Information Table

## Week Ending Sunday, April 17, 2011

| Station | Past Week Weather Summary Data | | | | | | | Accumulation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | April 1, 2011 through April 17, 2011 | | | | |
| | Air Temperature | | | | Precip. | | Avg 4 in Soil | Precipitation | | | GDD Base 50°F | |
| | Hi | Lo | Avg | DFN | Total | Days | Temp | Total | DFN | Days | Total | DFN |
| **Northwest (1)** | | | | | | | | | | | | |
| Chalmers_5W | 82 | 29 | 51 | +1 | 0.80 | 3 | | 1.88 | -0.10 | 8 | 52 | +7 |
| Francesville | 85 | 31 | 50 | +2 | 0.81 | 3 | | 1.97 | -0.10 | 7 | 39 | +10 |
| Valparaiso_AP_I | 83 | 34 | 51 | +3 | 0.57 | 3 | | 1.33 | -0.88 | 7 | 59 | +31 |
| Wanatah | 83 | 33 | 51 | +4 | 0.79 | 3 | 52 | 2.11 | -0.03 | 10 | 38 | +18 |
| Winamac | 83 | 33 | 52 | +3 | 0.87 | 4 | | 2.06 | -0.01 | 10 | 43 | +14 |
| **North Central (2)** | | | | | | | | | | | | |
| Plymouth | 84 | 31 | 51 | +2 | 0.93 | 3 | | 1.90 | -0.26 | 8 | 39 | +6 |
| South_Bend | 85 | 31 | 52 | +5 | 1.14 | 3 | | 2.09 | -0.11 | 8 | 54 | +31 |
| Young_America | 82 | 33 | 51 | +3 | 0.76 | 4 | | 2.22 | +0.31 | 10 | 41 | +13 |
| **Northeast (3)** | | | | | | | | | | | | |
| Fort_Wayne | 84 | 34 | 53 | +6 | 0.46 | 4 | | 1.31 | -0.58 | 10 | 57 | +32 |
| Kendallville | 83 | 33 | 51 | +3 | 0.69 | 4 | | 2.31 | +0.53 | 12 | 25 | +0 |
| **West Central (4)** | | | | | | | | | | | | |
| Greencastle | 81 | 35 | 53 | +2 | 0.99 | 4 | | 2.42 | +0.38 | 8 | 75 | +24 |
| Perrysville | 83 | 34 | 53 | +3 | 0.65 | 3 | 56 | 1.41 | -0.77 | 8 | 70 | +30 |
| Spencer_Ag | 81 | 38 | 55 | +5 | 1.28 | 4 | | 4.80 | +2.58 | 9 | 97 | +53 |
| Terre_Haute_AFB | 81 | 38 | 56 | +4 | 0.81 | 4 | | 2.94 | +0.80 | 9 | 113 | +60 |
| W_Lafayette_6NW | 83 | 33 | 53 | +4 | 0.63 | 3 | 54 | 2.07 | +0.05 | 9 | 62 | +32 |
| **Central (5)** | | | | | | | | | | | | |
| Eagle_Creek_AP | 82 | 38 | 55 | +4 | 0.57 | 4 | | 1.99 | -0.08 | 10 | 102 | +55 |
| Greenfield | 85 | 37 | 54 | +5 | 1.05 | 4 | | 4.38 | +2.18 | 10 | 78 | +43 |
| Indianapolis_AP | 83 | 38 | 56 | +5 | 0.64 | 4 | | 2.28 | +0.21 | 8 | 112 | +65 |
| Indianapolis_SE | 82 | 35 | 53 | +3 | 1.09 | 4 | | 4.08 | +2.05 | 10 | 72 | +30 |
| Tipton_Ag | 84 | 35 | 52 | +4 | 1.01 | 3 | 56 | 2.88 | +0.70 | 9 | 54 | +32 |
| **East Central (6)** | | | | | | | | | | | | |
| Farmland | 84 | 32 | 52 | +4 | 0.67 | 4 | 57 | 2.97 | +0.96 | 9 | 42 | +22 |
| New_Castle | 84 | 31 | 52 | +5 | 0.79 | 4 | | 3.91 | +1.66 | 8 | 61 | +39 |
| **Southwest (7)** | | | | | | | | | | | | |
| Evansville | 85 | 38 | 58 | +3 | 2.39 | 4 | | 3.47 | +1.21 | 6 | 174 | +81 |
| Freelandville | 82 | 40 | 56 | +4 | 1.38 | 4 | | 3.49 | +1.39 | 7 | 128 | +65 |
| Shoals_8S | 85 | 36 | 56 | +3 | 2.18 | 3 | | 3.67 | +1.39 | 6 | 119 | +57 |
| Stendal | 85 | 41 | 58 | +5 | 2.78 | 4 | | 4.66 | +2.18 | 7 | 160 | +85 |
| Vincennes_5NE | 83 | 40 | 58 | +5 | 1.53 | 4 | 61 | 3.14 | +1.04 | 6 | 125 | +62 |
| **South Central (8)** | | | | | | | | | | | | |
| Leavenworth | 86 | 40 | 57 | +4 | 3.16 | 4 | | 4.73 | +2.10 | 7 | 133 | +68 |
| Oolitic | 81 | 38 | 55 | +4 | 1.65 | 4 | 57 | 4.20 | +1.96 | 9 | 104 | +53 |
| Tell_City | 86 | 42 | 58 | +4 | 3.25 | 4 | | 4.39 | +1.66 | 7 | 154 | +72 |
| **Southeast (9)** | | | | | | | | | | | | |
| Brookville | 86 | 35 | 55 | +6 | 1.78 | 3 | | 4.09 | +1.99 | 7 | 90 | +56 |
| Greensburg | 86 | 36 | 56 | +5 | 1.22 | 3 | | 4.33 | +2.10 | 9 | 103 | +59 |
| Seymour | 83 | 37 | 55 | +3 | 2.64 | 4 | | 4.21 | +2.02 | 6 | 99 | +48 |



DFN = Departure From Normal.
GDD = Growing Degree Days.
Precipitation (Rainfall or melted snow/ice) in inches.
Precipitation Days = Days with precip of .01 inch or more.
Air Temperatures in Degrees Fahrenheit.

For more weather information, visit www.awis.com or call 1-888-798-9955.

*Nitrosomonas* converts ammonium-N to nitrite-N. The second bacterium *Nitrobacter* converts nitrite-N to nitrate-N. And as you know, nitrate-N is the form we are most concerned about being lost (whether by leaching or denitrification).

Nitrification inhibitors have one primary way of delaying the nitrification process, and that is eliminating the bacteria *Nitrosomonas* in the area where ammonium is to be present. There are three common nitrification inhibitors that are commercially available: 2-chloro-6-(trichloromethyl)-pyridine (nitrapyrin), dicyandiamide (DCD), and ammonium thiosulfate (ATS).

Nitrapyrin is the active ingredient found in the DOW® product N-Serve® and Instinct®. The biochemical activity of nitrapyrin and its ability to suppress growth of *Nitrosomonas* has been known since the 70s and it was initially registered in 1974. It is quite effective even at relatively low rates. Dicyandiamide (DCD) is the active ingredient in nitrification inhibitors such as Agrotain Plus®, SuperU® , and Guardian®. Dicyandiamide is required at a significantly larger concentration to be effective.

Since each of the products discussed above is highly sensitive to concentration, it is imperative that if they are used they are applied at labeled rates. Cutting rates is not in your best interest as an end user because a lower concentration may not allow the product to perform its job in the soil.

Applying anhydrous with nitrapyrin in the fall (which is *not* our recommendation for summer crops in Ohio) may realize a benefit of the nitrapyrin (as it is out in the field for a long time), but for most of us who apply anhydrous ammonia in the spring soon before planting and as a sidedress treatment, the utility of a nitrification inhibitor is difficult to justify since the risk of N loss is low. No-till situations are more likely to show positive yield results than conventional till systems for spring applied anhydrous.

Nitrification inhibitors are less likely to show an economic benefit when high N rates are used in the field. Nitrogen losses at high N application rates are not likely to affect yield as much if lower N rates are applied (fewer bushels per acre are gained with each additional level of N at the high levels).

**Summary**

Application timing, N source, application method, soil texture, and tillage are all factors that should be evaluated to determine where urease and nitrification inhibitors should be used. Before buying an inhibitor make sure scientific evidence backs up its claim. .A producer and/or consultant should be wary of any product that does not have solid scientific data demonstrating that the inhibitor activity matches the advertised benefit.

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